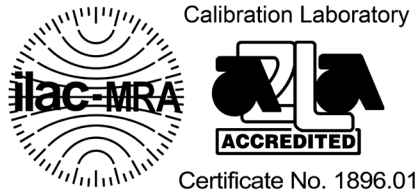


# PTC METROLOGY® - A Laboratory of PTC® INSTRUMENTS



A2LA Accredited for Pressure Calibration  
PTC METROLOGY® Uses NIST Traceable Standards  
and Meets the Requirements of:

- ISO/IEC Guide 17025
- ANSI/NCSL Z540-1

We are a member of ASTM. Our Technical Director holds a Ph.D. in Physics and serves on ASTM technical committees:

- D11.10, Physical Properties of Rubber
- E20.7, Fundamentals of Thermometry

PTC® is also a member of A2LA, NCSLI (National Conference of Standards Laboratories International), and ASQ (American Society for Quality).

Pressure calibrations are traceable to primary pressure standards and NIST.

A written calibration report for any Pressure Device calibrated is available from PTC Metrology®. Each certification provides the written data from the calibration points as well as an estimate of the uncertainties. The standards used are NIST traceable. Uncertainties in are primary standard can be as low as 50 ppm.



Above is a copy of our laboratory accreditation. See the reverse of this sheet to view a copy of our scope of accreditation to ISO/IEC Guide 17025 and ANSI/NCSL Z540-1



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SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005  
& ANSI/NCSL Z540-1-1994

PTC METROLOGY  
2301 Federal Avenue  
Los Angeles, CA 90064  
John Marcus Ph.D. Phone: 310 478 1134

CALIBRATION

Valid To: March 31, 2012

Certificate Number: 1896.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations<sup>1</sup>:

I. Mechanical

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Durometer Calibration –			
Indenter Shape Diameter	(0.045 to 0.055) in (0.0897 to 0.0977) in (0.030 to 0.032) in	100 µin 100 µin 100 µin	ASTM D2240, comparator overlay
Radius	(0.248 to 0.252) radii (0.0466 to 0.0470) radii (0.0035 to 0.0045) radii	300 µin 300 µin 100 µin	
Angle	(34.75 to 35.25) degrees (29.5 to 30.5) degrees	0.04 degrees 0.04 degrees	
Indenter Extension	(0.096 to 0.1) in (0.048 to 0.05) in (0.298 to 0.302) in	50 µin 50 µin 50 µin	Gage blocks

Parameter/Equipment	Range	CMC <sup>2,3</sup> (±)	Comments
Readout Linearity –	(0.01 to 0.3) in	50 µin	Gage blocks
Force (spring calibration)	(1 to 821) gf (1 to 4534) gf (1 to 9112) gf (1 to 142) gf	0.6 gf 3.1 gf 6 gf 0.3 gf	Durocalibrator, electronic scale, load cell
Pressure –	(0.2 to 12 140) psig (0.2 to 1000) psia (0.2 to 3000) psig (0.01 to 1) Torr Barometric	0.0050 % rdg + 0.6R 0.0010 % rdg + 0.6R 0.0025 % rdg + 0.6R 5 % rdg 5 mmHg	Ruska 2400 Ruska 2465 Ruska 2470 GP275 TC gage WT 600
Transmitter Output	(0 to 100) mA dc (0 to 100) V dc	0.1 mA 0.008 V	Fluke 8845A

II. Thermodynamics

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Temperature –			
Temperature Immersion	(61.2 to 196) K (-196 to -77) °C	16 mK 0.016 °C	Liquid Nitrogen comparator
	(-196 to 273.2) K (-77 to 0) °C	11 mK 0.011 °C	Stirred bath ULT80
	(253.2 to 373.2) K (-20 to 100) °C	9 mK 0.009 °C	Stirred bath Hart 7030
	(323.2 to 551.2) K (50 to 278) °C	9 mK 0.009 °C	Stirred bath Hart 6022
	273.16 K 0.01 °C	0.2 mK 0.0002 °C	TPW Hart 5901A
	Ambient air temp	150 mK	PTC stirred air bath
	(548.2 to 953.2) K (275 to 680) °C	68 mK 0.068 °C	Comparator Hart 9260
	(873.2 to 1273.2) K (600 to 1000) °C	600 mK 0.6 °C	Comparator Hart 9112 deep well 16"
	(873.2 to 1273.2) K (600 to 1000) °C	700 mK 0.7 °C	Comparator Hart 9150 deep well 7"
Surface	(268.2 to 313.2) K (-5 to 40) °C	120 mK 0.12 °C	PTC cold calibrator
	(293.2 to 463.2) K (20 to 190) °C	500 mK 0.5 °C	Hart 3125 surface calibrator
	(464.2 to 673.2) K (191 to 400) °C	1 K 1.0 °C	Hart 3125 surface calibrator
	(673.2 to 798.2) K (400 to 525) °C	400 mK 0.4 °C	PTC hot calibrator
Infrared Black Body	(293.2 to 1273.2) K (20 to 1000) °C	1.5 K 1.5 °C	Wahl black body BB-1100
Transmitter Output	(0 to 100) mA dc (0 to 100) V dc	0.1 mA 0.008 V	Fluke 8845A
Relative Humidity – Measure	(10 to 90) % RH	3 % RH	Assmann psychrometer

<sup>1</sup> This laboratory offers commercial calibration service.

<sup>2</sup> Calibration and Measurement Capability (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. Calibration and Measurement Capabilities represent expanded uncertainties expressed at approximately the 95 % level of confidence, usually using a coverage factor of  $k = 2$ . The actual measurement uncertainty of a specific calibration performed by the laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.

<sup>3</sup> In the statement of CMC,  $R$  is the numerical value of the resolution of the device.



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